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The Mystery of the Gun Turret in the Desert

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November 30, 2015

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This work performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344.

The mystery of the gun turret in the desert

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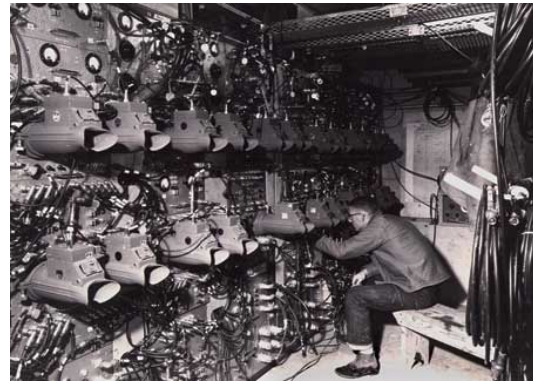


The mystery of the gun turret in the desert began with an ingenious idea: to develop a reusable open-air line of sight diagnostic device to support LLNL's early nuclear weapons development efforts. Obtained from the Mare Island Navy Shipyard (MINS) in January 1957, the gun turret traveled by ship to the Naval Construction Battalion base at Port Hueneme, California, and then by truck to Area 2 in the Yucca Flats valley at the Nevada Nuclear Security Site (NNSS).



The turret was intended to safely house equipment that was used to diagnose three above ground atomic tests (Shasta, Diablo, and Whitney) during Operation Plumbbob in 1957.

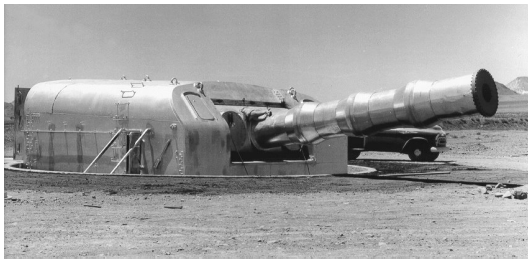
Each nuclear device was deployed atop a 500-foot tower situated less than a mile away from the 2-300 bunker complex, next to which the gun turret was sited. The central position of the gun slide was fitted with an 81cm x 4.8m lead-lined collimating tube. With the ability to elevate and rotate through 360 degrees, the turret was intended to point at each device sitting on top of its respective tower. The towers were very stable platforms to aim at and because of their great height helped reduce radioactive fallout.



When detonated, light from the device would shine down the collimator and onto sensitive detectors within the gun turret. They would then convert this light into electrical signals that were then transmitted via coaxial cable to a bank of oscilloscopes in the 2-300 bunker complex where the scope traces were photographed. These were then analyzed to assess the efficiency, or "bang for the buck" of a given device.

A primary motivation for installing the gun turret was to save money. Apart from the cost of the device and its support structure (typically towers or balloons), an atmospheric test also

required building a number of special purpose bunkers to house detector stations. Often several detectors were mounted on the towers themselves. These were connected to the recording bunker by high quality coaxial cable that had to be buried in trenches (frequently referred to as "Panama Canals") that were often 20' wide by 20' deep and up to a mile or more in length depending on the yield of the device. The genius of using the gun turret was that it could observe a number of tower tests with just one bunker complex for both observation and recording, thus serving as a *re-usable* line of sight. For a detailed description of the 2-300 complex see the report developed by Edwards & Johnson (Desert Research Institute - Report SR062095-2, 1995).



It was intended that the gun turret be used in more than one operation. However, in 1958, the US and USSR agreed to their first nuclear test moratorium which lasted until 1961. Subsequent agreements ended above ground nuclear testing by 1963. Six above ground tests were conducted in Area 2 between 1952 and 1957 but the gun turret was never used again after Operation Plumbbob.

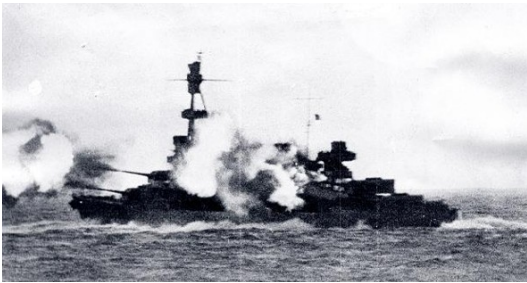
The DRI report suggests that the gun turret was removed from a pre-WW2 battleship or heavy cruiser that was mothballed at one of the California

Naval Ship Yards, and that its historical significance is related to its current location and association with atmospheric nuclear testing. A fair number of current historical experts at the test site have different opinions of where the turret originally came from, but all agree that it has a rich history that deserves to be further explored. The remainder of this report attempts to determine that history and finds that it is a legacy of courage forged in a time of ultimate human conflict.



The design of the gun turret at the NNSS is of US Navy origin. Designated as a Mark 9 turret, it mounted three 8"/55 caliber naval rifles. Twelve ships carried this particular turret design, ten cruisers and two aircraft carriers. The cruisers, all built around the early 1930's, were the two ships of the Pensacola class (*Pensacola* and *Salt Lake City*), the six ships of the Northampton class (*Northampton*, *Chester*, *Louisville*, *Houston*, *Chicago*,

and *Augusta*), and the two ships of the Portland class (*Portland* and *Indianapolis*). These were known as “Treaty” cruisers because they were built under the restrictions of the Washington Naval Treaty of 1922. As such they were limited to a 10,000 ton displacement. All were originally built as light cruisers (CL) due to their fairly weak armor schemes. They were re-classified by the London Naval Treaty of 1930 as heavy cruisers (CA) due to their 8” main battery armament. The aircraft carriers *Lexington* and *Saratoga* each mounted four two-gun versions of this turret, but these were removed shortly after the beginning of WW2 for use as coastal defense guns on the Hawaiian Islands.



The battle history of these ships is a tale of great success and sorrow. Of the twelve ships mentioned, five were lost to enemy action: *Houston* in the Sunda Strait, *Lexington* at the Battle of the Coral Sea, *Northampton* and *Chicago* at Guadalcanal, and the *Indianapolis* in the Philippine Sea. All were sunk by Japanese torpedoes and all but the *Indy* were lost in the first 14 months of the war. The only cruisers to escape torpedo damage were the *Augusta*, who served in the Atlantic, and the *Salt Lake City* and *Louisville*, who were both hit by torpedoes that did not explode. The aircraft carrier *Saratoga* was torpedoed on two

occasions but survived the war only to be expended, as were the *Pensacola* and *Salt Lake City*, during Operation Crossroads in 1946, the first of a series of nuclear tests conducted in the Pacific. True to their battle-hardened reputations, these cruisers each survived two atomic blasts but were severely contaminated and eventually sunk as target drones in 1948.



The remaining four cruisers, *Chester*, *Louisville*, *Augusta*, and *Portland*, were fully functional at war's end. After accepting the surrender of numerous Japanese commands and returning thousands of service men home, they were put into fleet reserve at the Philadelphia Navy Yard from 1946 until they were sold for scrap in 1959. The *Augusta* in reserve appears below.



The events described so far present a serious quandary. The gun turret was employed at the Nevada Test Site in 1957, but the four cruisers it could have been removed from were in fleet reserve on the east coast from 1946 to 1959. While in fleet reserve, ships are regularly overhauled so that they can be quickly re-conditioned and returned to service if need be (several of the *Baltimore* class cruisers were re-activated for the Korean conflict). Archival photos of the four fleet reserve cruisers with the Mark 9 turret show that all turrets were in place when they were scrapped.

Might the gun turret obtained from the Mare Island Shipyard have been a spare? This is very doubtful, as turrets were made from armor plate, a commodity in high demand during the war. Obviously, the gun turret was not recovered from the bottom of the sea! Most likely it was damaged in battle and removed from one of these ten cruisers before the end of the war.

All ten of the cruisers that mounted the Mark 9 turret with the exception of the *Augusta* suffered battle damage in WW2. Detailed summaries of the engagements and damage were published in a series of War Damage Reports. This investigation will focus (with one exception) on instances where a cruiser sustained damage to a main battery turret.

The USS *Portland* (CA-33) sustained damage during the Naval Battle of Guadalcanal on November 13, 1942. She was struck by a shallow running torpedo fired by a Japanese destroyer that caused extensive damage to her stern on the starboard side.



This hit locked her #3 main battery turret in train and elevation. She had to be towed to dry dock in Australia and eventually returned under her own power to Mare Island for extensive repairs. Accounts from the cruise book dedicated to this ship as well as eyewitness testimony from Ted Waller (S1, USS *Portland*, 1941-46) indicate that all main battery guns were relined, but that the #3 turret was re-mounted, not replaced.

The USS *Pensacola* (CA-24) sustained damage off the coast of Guadalcanal during the Battle of Tassafaronga on November 30, 1942. She was hit in the same manner as the *Portland* but on the port side at frame 120. This hit also locked her #3 main battery turret in train as shown below.



On return to Pearl Harbor this turret was removed, but the damage was to its structure below deck, not to the face, sides, or roof. Interestingly, both side doors on the NNSS gun turret exhibit the hand drawn characters “CA 24” suggesting that they were at some point aboard the *Pensacola*. Off of Iwo Jima on February 17, 1945 she received six hits from Japanese shore batteries, one just aft of main battery turret #2 that caused some relatively minor splinter damage to it.

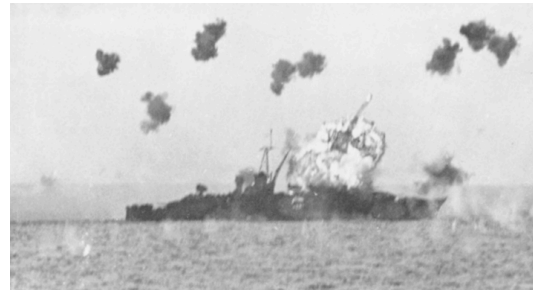


There has been an enduring account by some historians at the NNSS that the gun turret came off of the USS *Salt Lake City* (CA-25). She was damaged in two engagements. The first was again off the coast of Guadalcanal during the Battle of Cape Esperance on October 11, 1942. There she took three gunfire hits on the starboard side, one to the armored belt, and another to fire room #1. A third round fell short and caused some splinter damage, but no main battery turrets were seriously affected.

Her second engagement was at the Battle of the Komandorski Islands in the Bearing Sea on March 26, 1943. There she took several 8” projectile

hits from two Japanese heavy cruisers. Although dead in the water at one point, she managed to escape when her destroyer consorts screened her with smoke and conducted a daring and determined torpedo attack, forcing the enemy to disengage. Again, no main battery turrets were affected.

Finally, the USS *Louisville* (CA-28) sustained damage from two kamikaze attacks while proceeding to Lingayen Gulf in the Philippines on January 5 and 6, 1945. The first was from a D4Y “Judy” torpedo bomber that impacted on the roof of main battery turret #2.



The second attack was by a D3A “Val” dive bomber that crashed into the signal bridge and knocked down the forward stack. Both attacks caused extensive damage, and the latter one severe casualties, most notably to her Captain and to Rear Admiral Theodore Chandler, commander CruDiv 4. With over 40 dead and 120 wounded, “Lady Lou” was forced to retire, arriving at Mare Island on February 6, 1945.





The images above show the damage to *Louisville's* main battery turret #2. The War Damage Report states that "the damage was so extensive that the entire 8"/55 cal. turret had to be replaced with a new unit." The turret was jammed in train and elevation due to a bomb that exploded just above the left gun leaving all three out of battery. Prominent is the large dent on the port side rooftop that extends from the inner side of the faceplate to the center of the middle gun. Also, the gun-port plate and shield usually mounted between the roof plate and the three main guns are not visible

(both had been blown into the turret by the force of the explosion). Finally, the portside faceplate made of Special Treated Steel (STS) was dismantled. Each of these armor panels is attached to the main side and base plates of the turret with rivets or bolts (most often secured from the inside) that were sheared away by the force of impact and explosion. The interior of the turret was badly damaged by blast and fire.

The gun turret at the NNSS today still bears these same battle scars inflicted over 70 years ago. What follows is photographic evidence that strongly suggests the gun turret is from the *USS Louisville*. These were taken on May 17, 2015.

From a vantage point atop the roof of the gun turret looking down and forward, a non-uniform patch that extends from the inner side of the faceplate to the middle gun is welded into the rooftop armor plate. This patch is large enough to encompass the deformed and ruptured area seen in the MINS photos. Although not yet confirmed, the gun-port plate appears to be bent inward on the port side. The shield just below the gun-port plate appears new and was likely replaced when the turret was either repaired or reconfigured for the NNSS.



Entering the gun pointer station from the port side door one can view the backside of the gun-port plate. It is a flat brown color unlike any other painted surface inside the turret. Its bolt pattern also appears to be different from one shown in a photo taken aboard ship just after the attack.



Close enough for government work?
The view of this same joint on the starboard side shows a fit worthy of the term "factory finish."

Finally a close-up of the gun slide, which is made of softer steel than the STS plates attached to it, shows pings and dings that appear on top of the slide but not in the shadow of the guns below. This suggests a splash pattern of fragments from the explosion that scarred the upper areas of the slide.



Again, looking down and forward to the lower corner of the port side STS faceplate, it is seen to be displaced from the baseplate of the turret by $\frac{1}{2}$ ".

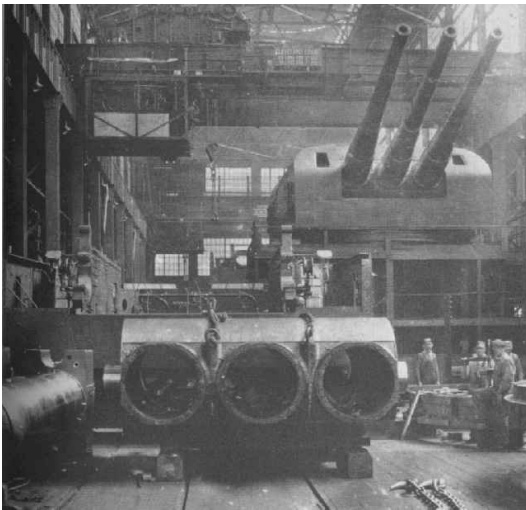


The evidence presented to this point is suggestive, but still circumstantial. However, definitive markings do exist in the form of the actual serial number of the turret. Located two feet up from the base and midway along the port and starboard side armor plates is the following hand stamped inscription:

BP 132347-D
OUTSIDE
PLATE NO 2
ASSEM NO 117



These were likely applied in 1930 when the guns and turrets for the *Louisville* were being assembled at the Washington Navy Yard. Below is an image of this very assembly.



Tracking down a serial number from the 1930's, 40's, or even 50's, has proven very challenging. The relevant sources were the Bureau of Ships and the Bureau of Repair, both of which were merged into NAVSEA in 1974. Since the *Louisville* was built at the Puget Sound Naval Shipyard in 1930, the National Archives in Seattle, WA were first consulted. Sadly, archive director Susan Karren reported that records of the *Louisville's* construction in 1930 are no longer available.

The records for the now de-activated Mare Island Shipyard from 1925-1995 are contained in 134 boxes from Federal Transfer Record 181-58-3234, currently stored at the San Bruno Annex of the National Archives. With assistance from archivist Bill Greene, five boxes of records were examined that contained folders related to turrets and fire control (Navy File System numbers S-71 and S-72). The records in these folders are mostly of a legal nature, along with a few training manuals. The detailed repair records appear to have all been destroyed.

One box of great interest was labeled Battle Damage Reports and contained a number of folders that were labeled by ship name and hull number. These typically contained a copy of the War Damage Report for the ship listed and one or more plates illustrating the damage to be repaired. None of these documents went into the necessary level of detail to discern a serial number on a turret. San Bruno had no copy of the War Damage report for the *Louisville*. It was obtained from Jerry Leslie at USNAVYRESEARCH.COM.

This investigation has identified two ships that could have been the source of the NNSS turret: the *Pensacola* and the *Louisville*. Although *Pensacola* had her #3 turret *removed* no evidence has been found that the upper part of it was replaced, whereas the WDR for the *Louisville* states that her #2 turret was *replaced* by a new unit. This is confirmed by two former *Louisville* crew members Mike Marino (MM3, 1941-43) and Ralph Hopkins (S1, 1945-46). Mr. Hopkins, assigned to the ship on her return to MINS, was an eyewitness to this event. He has relayed that when informed of the damage at Lingayen, the repair yard constructed a replacement turret that was waiting for the *Louisville* when she arrived. The swap was performed in four hours, after which the damaged turret went into one of five “bone-yards” where spare or damaged equipment was stored in and around MINS. At the end of the war several such turrets from a variety of ships were available as war surplus. In one such yard the gun turret was selected by Bill McMaster, who had the inspiration to turn a piece of scrap into a nuclear test diagnostic.

Based on the photographic evidence presented so far and other forensic evidence in the form of paint samples (still being analyzed) that might confirm an interior fire, it is my firm contention that the gun turret at the NNSS was originally installed aboard the USS *Louisville*. She ended up serving her country long after her last salvo was fired.

To all who go in harm’s way, and those who support them, we salute you.



Acknowledgments

I wish to thank several colleagues for their help in making this research effort possible. Chuck Costa, Nelson Cochrane, and Ernie Williams were instrumental in arranging my second visit to the NNSS where the forensic evidence was obtained. Jim Kapselas, Don Smith, Willy Cooper, and Dawn Contreras led the Federal Nuclear Expertise Class expedition to the test site where I originally saw the gun turret. Richard Ward has provided constant support, and Kim Knight continues to provide forensic insight and analysis. Archivists Bill Greene, Gina Bardi, and researcher Jerry Leslie have been very helpful in arranging access to rare documents.

Special thanks go to the three WW2 veterans I have had the great honor to correspond with: Mike Marino and Ralph Hopkins of the USS *Louisville*, and especially Ted Waller who, as a member of the anti-aircraft detail aboard the USS *Portland*, personally witnessed the Kamikaze attack on the USS *Louisville* on January 5, 1945.

This work was performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344.
LLNL-TR-679776